

REMARKS

Reconsideration of the rejections set forth in the outstanding Office Action is respectfully requested. By this amendment claim 1 has been amended. Currently, claims 1, 3, 5-9, 11-15, and 17-20 are pending in this application.

Rejection under 35 USC 102

Claims 1, 3, 5-9, 11-15, and 17-20 were rejected under 35 USC 103 as unpatentable over Dighe (U.S. Patent Application Publication No. 2002/0097725) in view of Goode (U.S. Patent No. 7,327,675). This rejection is respectfully traversed in view of the amendments to the claims and the following arguments.

This application relates to a way to assign and allocate network resources to layer 1 Virtual Private Networks. A company that owns an optical network may not want to operate the network and may prefer to lease portions of the network to other companies that may then use the network themselves or operate a network on the leased portion of the network. (Specification at Page 2, lines 1-8). For example, a company that owns many routers interconnected by optical fibers may lease some of the routers and optical fibers to a particular Network Service Provider. The network service provider can then provision the routers to implement a particular type of network and control how the network elements operate. The network service provider, in turn, will enter into agreements with customers to provide the customers with particular network services such as VPN services. In doing so, the customers don't control the network but rather simply are provided with the right to transmit data across the network.

Layer 1 VPNs are different than layer 2/3 VPNs since, in a Layer 1 VPN the customer who owns the Layer 1 VPN actually has control over dedicated physical network resources that are physically assigned to the L1-VPN. Thus, in a L1-VPN the customer is able to control and provision the physical network resources. By contrast, in a layer 2 or layer 3 VPN, the traffic is configured to flow over network elements without providing the VPN customer with control over the physical network resources and without enabling the VPN customer to provision the underlying network elements.

Stated another way, although layer 2/3 VPNs are able to create tunnels through the network for particular customers, those customers don't actually obtain dedicated rights to the network resources for transmission of data associated with the VPN. Thus, the customers can't

manage the underlying network elements to control how those network elements are operating. Rather, in Layer 2/3 VPNs, the customer relies on the network service provider to operate the network elements, and data for the customer is simply transferred by the service provider over the network elements on the customer's behalf.

Dighe teaches a way to implement ATM VPNs on a communication network. In Dighe, creation of an ATM VPN does not result in allocation of physical network resources to particular customers such that the customers can provision and control the physical network resources. Rather, the ATM VPN runs on top of the extant physical network and the service provider provisions and controls the underlying network. Thus, although each customer is provided with an ATM VPN, the customers associated with the VPN do not control the physical network resources that are providing the ATM services on the network, but rather the control and provisioning of these resources is done by the service provider who owns the underlying network elements.

Goode teaches the use of MPLS VPNs in which Label Switched Paths are created across an MPLS network and used to carry VPN traffic. Although Goode teaches that network resources may be reserved for the VPN (using RSVP), Goode does not teach that the physical network resources should be dedicated to a VPN so that the customer associated with the VPN is able to provision the network resources or control the underlying network resources. Rather, like in Dighe, the underlying network resources (i.e. PE and P routers) are controlled and provisioned by the network operator. The network operator then enables customers to reserve portions of the resources for traffic that is to be carried across the LSPs on the VPNs.

Accordingly, the big difference between this application and the art cited by the Examiner is that applicants are focused on providing a way to allocate the actual physical devices that make up the network. Specifically, applicants sought to enable the actual physical devices to be allocated to be used either by a particular L1-VPN or to be able to be used by a group of L1-VPNs. Once allocated as either dedicated or shared resources, the physical resources could then be assigned to particular L1-VPNs and provisioned/controlled within that L1-VPN so that the physical network resources would be available exclusively within the L1-VPN to which they had been assigned. (Specification at paragraph 8).

To clarify the differences between L1-VPNs (which is the focus of this application) and the L2/3 VPNs appearing in the cited references (Dighe and Goode), applicants have amended

claim 1 to recite a method of assigning and allocating physical network resources to enable Layer 1 Virtual Private Networks (L1-VPNs) to be created within a communication network of the physical network resources. Further, claim 1 has been amended to recite that each of the L1-VPNs includes dedicated physical network resources which are physically assigned to the L1-VPN and able to be controlled and provisioned for use exclusively within the L1-VPN. This clarifies that control and provisioning of the physical network resources is a hallmark of a L1-VPN. The Layer 2/3 VPNs of Dighe and Goode do not incorporate this feature since the L2/3-VPNs of Dighe and Good are merely ways of enabling data to be transported across an underlying network; the underlying physical network resources are not controlled and provisioned by the L2/3 VPNs discussed in Dighe and Goode.

Since these limitations reside in the preamble, applicants have further amended the method steps to recite that the method includes the step of designating a first subset of the available physical network resources as dedicated L1-VPN resources. The term “dedicated L1-VPN resources” is then defined within this method step as being “physical resources on the communication network that are designated as being dedicated to be provisioned and used only within a first L1-VPN.” Dighe and Goode do not teach or suggest that physical resources should be able to be assigned to be dedicated and provisioned for use only within a particular VPN. Rather, in Dighe and Goode the physical resources are shared by the various VPNs implemented on top of the network.

Claim 1 has further been amended to recite that the method includes the step of designating a second subset of the available physical network resources as shared L1-VPN resources. This method step then further defines the “shared L1-VPN resources” as being “physical resources on the communication network that are allocated as available to be assigned for use in two or more separate L1-VPNs.” Thus, shared network resources are also physical network resources on the communication network, but unlike dedicated network resources the shared network resources can be assigned to two or more L1-VPNs. Note, in this context, that a shared network resource would only be assigned to one of the several possible L1-VPNs at any given time since physical network resources are a part of at most one L1-VPN at any given time.

Claim 1 further recites that, of the shared resources, at least a second portion has been assigned to the first L1-VPN for exclusive use within the first L1-VPN to enable the second portion to be provisioned and used only within the first L1-VPN. Further, claim 1 recites that at

least a third portion of the shared resources are unassigned and able to be assigned to the first L1-VPN or to a second L1-VPN for exclusive use within the first L1-VPN or second L1-VPN on demand. This clarifies that, in this method claim, physical network resources which are allocated to be shared between two or more L1-VPNs are not part of either L1-VPN until they are assigned to a particular L1-VPN. This further clarifies that the shared network resources may be requested and assigned as needed "on demand".

The combination of Dighe and Goode does not teach or suggest a method of this nature. Specifically, Dighe and Goode are both associated with creating VPNs on top of a network of physical elements that has been provisioned and is under the control of a service provider. By contrast, when physical network resources are assigned to an L1-VPN, the actual physical network resources themselves become under the control of the person operating the L1-VPN so that the person operating the L1-VPN can provision the network resources and control the manner in which the network resources operate. This allows the person in charge of the L1-VPN to create a separate network from the physical network elements assigned to the L1-VPN by provisioning and actually controlling the underlying physical network elements. Since the combination of Dighe and Goode does not teach/suggest the method recited in independent claim 1, applicants respectfully request that the rejection under 35 USC 103 be withdrawn.

Conclusion

In view of foregoing claim amendments and remarks, it is respectfully submitted that the application is now in condition for allowance and an action to this effect is respectfully requested. If there are any questions or concerns regarding the amendments or these remarks, the Examiner is requested to telephone the undersigned at the telephone number listed below.

No fees are believed due in connection with this filing. If any fees are due in connection with this filing, the Commissioner is hereby authorized to charge payment of the fees associated with this communication or credit any overpayment to Deposit Account No. 141315 (Ref: 16716ROUS01U).

Respectfully Submitted

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